

**HIGHLAND FLATS TREE FARM
WETLAND AND RIPARIAN MITIGATION
-2017 ANNUAL REPORT-**

Prepared for

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1.0 INTRODUCTION

A Detailed Wetland and Riparian Mitigation Plan (Detailed Plan) was developed in 2016 for the Highland Flats Tree Farm (HF) in Naples, Idaho (ECW 2016a). The Detailed Plan described the activities to occur within three separate mitigation areas: the Headwater (HW) Restoration area, the Culvert Enhancement area (Culvert) and the Reservoir Mitigation Area (Reservoir). (See Figure 1 for mitigation area locations). Hereafter, the three mitigation areas are referred to as the HW, Culvert and Reservoir areas, respectively.

Mitigation was implemented in the Culvert, Reservoir and portions of the HW area (HW-2/upper HW-3a) in 2016. Monitoring of these completed mitigation areas was initiated in May 2017, with both spring and late growing season monitoring conducted. Maintenance of the completed mitigation was also initiated in 2017, consisting primarily of ongoing weed control, some unexpected and remedial weed control, and temporary irrigation.

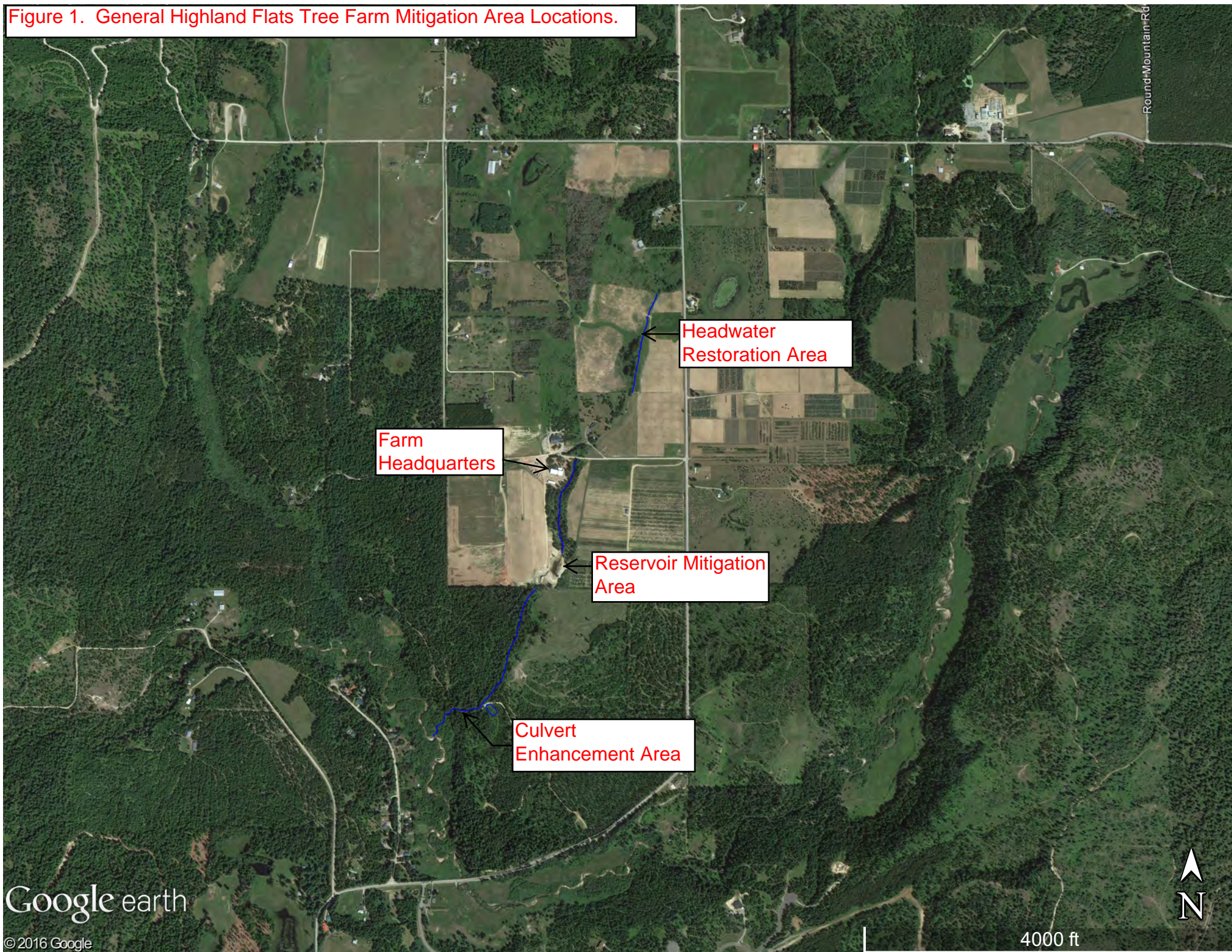
The remainder of the HW area (HW-1, lower HW-3a and HW-3b) was dominated by the non-native invasive species reed canary grass (*Phalaris arundinacea*, hereafter referred to as RCG) and common tansy (*Tanacetum vulgare*, hereafter referred to as tansy). As a result, mitigation implementation in these areas was scheduled to occur over a two-year period to allow time for weed control via solarization to occur. Mitigation implementation was completed in Fall 2017. At that time, supplemental planting and seeding within previously-completed mitigation areas were also conducted.

This report provides a summary of:

- Maintenance and remedial activities implemented in 2017,
- Final mitigation (construction) tasks completed in 2017, and
- 2017 monitoring results for the previously-completed mitigation.

As a combined Annual Monitoring and Construction Completion Report, the report is organized as follows. Section 2.0 provides a summary of the maintenance and remedial activities conducted in 2017 and describes any changes from the Detailed Plan. Because similar activities proceeded concurrently on all sites, the implementation details are described by activity. Section 3.0 describes the construction activities implemented to complete the mitigation, providing specific implementation dates and documentation. Section 4.0 provides the monitoring results for the 2016-completed mitigation. Section 5.0 provides an overall project summary and a maintenance and monitoring schedule for 2018.

Figure 1. General Highland Flats Tree Farm Mitigation Area Locations.



2.0 MAINTENANCE AND REMEDIAL ACTIVITIES

2.1 Weed Control

Weed control activities were mostly similar to those conducted during 2016, following the same or more stringent specifications, and included:

- Ensuring that the black plastic providing HW solarization weed control was intact following the winter, as well as after summer thunderstorms and other windy events.
- Manually removing any RCG and tansy in the graded portion of the HW area and adjacent channel and the RCG re-growth in the Culvert area (less than 1-2% overall cover, but higher immediately adjacent to the culvert).

The RCG around the Reservoir was substantially reduced over that of 2016, but some additional RCG manual removal was necessary during May and July. One difficulty in manual removal was the ability to dig the non-native species without trampling adjacent native plants or damaging the underlying soils. Although some removal was accomplished via shoreline access, the remainder of the removal was switched to a water-based access: either wading from deeper water into the shoreline or access via a paddleboard.

Milfoil removal also occurred in the entire reservoir in July and early August using a combination of deepwater wading, water access via paddleboard, and snorkeling. All parts of the reservoir were subject to manual removal, including those areas outside of the designated mitigation areas.

All manually removed weeds were placed in covered plastic bins or closed heavy duty trash bags and placed in the disposal area identified in the Detailed Plan.

In addition, two weed-related control items were identified for remedial or potential remedial action. These included addressing the lack of solarization success in HW-1 weed control and addressing encroachment of some non-native species associated with an erosion control mix in the HW-2 and Reservoir areas (see Section 2.3 Remedial Activities for full details).

2.2 Temporary Irrigation

Irrigation was installed in the HW area in June and approximately 1,500 gallons of water per week applied using a gravity feed system. The water was applied at a slow rate overnight to ensure penetration of water into the soil. In lieu of using a pump, the water tank was installed on top of a stand to provide the head necessary for water to reach throughout the line length. In July, the water amount was increased to the level identified in the irrigation specifications (1 inch per week or approximately 3,000 gallons, double the amount previously applied). The higher amount of water was applied between July 19 and the end of August. The Culvert area irrigation started in July after stream flows ceased and the streambed dried. Irrigation for both areas ceased at the end of September.

2.3 Other

Precipitation during the 2017 water year from October through April was almost double the long term average for the area (see Appendix A) resulting in some very high unnamed stream flows during spring 2017. These high flows resulted in the removal of a number of anti-herbivory cages (and sometimes the plants as well, see Section 4.3) in the Culvert area. The cages were replaced in May on the surviving plants. Many of the remaining plants exhibited high vigor, with some of the dogwoods and cottonwoods outgrowing their cages. Larger cages (5 by 48 inches) were placed on these plants in October by slipping them over the existing cages.

The cottonwoods in the HW-2 area likewise outgrew their cages (originally 3 1/4 inch by 30 inches) with larger cages also placed on the plants in the Fall.

2.4 Remedial Activities

As noted in Section 2.1, a number of unexpected issues arose with either (1) the implementation of the weed control specifications in the Detailed Plan, or (2) new non-native species emergence. These items are described below according to the specific issue, the actions taken to resolve the issue, the results, and if additional remedial action remains.

2.4.1 Remedial Action 1: HW-1 High Non-Native Invasive Weed Cover

Issue: The black plastic for solarization was not functioning adequately for weed control where cut and placed around existing woody plants and there was abundant RCG and tansy growth in the mitigation area.

Actions Taken: Glyphosate was applied in all areas located 25 or more feet from field edges on RCG, with directions provided to also treat tansy as appropriate within this zone. Herbicide treatment occurred twice by a licensed applicator (May 19 and June 9 for Treatment 1; July 1 for Treatment 2). The RCG in the channel of the adjacent HW-2 was also treated at this time. A 1% solution of Rodeo with Sil-Tac surfactant was used (2% in Treatment 2). Herbicide was applied using a combination of hand wicking and backpack sprayer. No herbicide movement into the 25 foot buffer occurred and no within channel treatment occurred until soils were fully dry. All RCG and tansy were manually removed within 25 feet of fields (i.e., within the field buffer zone) on May 9.

Results: The RCG herbicide control was fair to poor. No tansy was treated by the herbicide applicator in spite of directives to do so. Manual control was somewhat more effective but required greater ongoing root/rhizome removal, which was difficult to accomplish around the existing native shrubs. Late August non-native invasive weed cover in HW-1 was estimated as 30 to 40%.

Additional Remedial Action: HW-1 consists primarily of upland habitat and was included in the Detailed Plan to provide a buffer for the adjacent wetlands. Rather than trying to restore the area as mitigation acreage, discussions with the EPA during an on-site field visit resulted in an agreement

to treat the area as the buffer it was intended to be (ECW 2017). In lieu of weed eradication, future actions will focus on preventing weed seed spread and using shade to help reduce the weed growth. The following actions were identified, in conjunction with EPA, as the revised HW-1 plan.

- Planting of ponderosa pine east of the channel to assist in shading out the upland weeds and coyote willows in the channel to shade the wetland RCG.
- Shifting to an ongoing program of periodic RCG and tansy cutting to prevent flowering/seed set.

Willow and pine planting will occur in early Spring 2018 in conjunction with other HW area planting for which plants were not available in the Fall. The periodic cutting will begin in spring 2018. The anticipated start date will be approximately mid-June (depending on annual phenology), with a second cutting 30 to 45 days later. If necessary, a third cutting would occur. Cutting will be done with a hand-held weed-eater, with shrubs and trees to avoid marked ahead of time. The exact timing of the 2018 cuttings will be identified during the early May monitoring period.

2.4.2 Remedial Action 2: Erosion Control Mix Spread

Issue: Components of a common upland erosion control mix used in the area (including around the HF reservoir and within some of the farm fields) were observed in the HW-2/upper 3a and Reservoir mitigation areas. This mix includes bird's-foot trefoil (*Lotus corniculatus*) and white clover (*Trifolium repens*), both well suited to stabilizing soil, but which are non-native species.

Actions Taken: The species in the erosion control mix represent early seral plants that will naturally decrease in cover over time, providing interim soil stabilization as the native plants establish (see also ECW 2017, and Section 4.1). To accelerate their natural decline, three lodgepole pine (*Pinus contorta*) and three western red cedar (*Thuja plicata*) will be planted in the HW and Reservoir mitigation areas, respectively to provide additional shade.

Results/Additional Remedial Action: The remedial actions will be implemented in early Spring 2018 (as the plants were ordered but not diggable in Fall 2017) and will be evaluated in subsequent years.

2.4.3 Remedial Action 3: Lower than Desired Cover

Issue: Although total cover is not a success criteria in the first year, some bare areas were noted in the HW-2/upper 3a area during monitoring. Cover in this area was also lower than expected and may not meet cover success criteria in subsequent years. Additionally, the bare areas may provide open spots for new weed establishment.

Shrub cover was lower than desired in portions of the Reservoir and Culvert areas.

Actions Taken: A germination test on the stored seed indicated only 60% average viability. The

previously-graded portion of HW-2/upper 3a was re-seeded in Fall 2017 at double the previous rate or approximately 300 seeds/square foot. A new vendor was used for the remaining project seed.

Supplemental shrub/tree planting will occur in Spring 2018.

Results/Additional Remedial Action. The remedial actions will be implemented in Spring 2018 and will be evaluated in 2018.

3.0 2017 CONSTRUCTION

3.1 Overview

The primary activities identified for mitigation completion in 2017 included:

- Installing the remaining sod mats at the Reservoir,
- Finishing the HW-2 grading and topsoil replacement which had been halted by adverse weather conditions in Fall 2016,
- Removing the remaining solarization material in the HW area, and
- Completing the full mitigation area planting, except for ordered plants that were not available in Fall 2017 due to weather conditions.

In addition, supplemental planting and seeding occurred in areas where the Year 1 vigor or cover was lower than anticipated to ensure that future cover year goals can be met. Even though the supplemental planting and seeding represent “remedial activities”, they are described in this section as they occurred concurrently with the 2017 construction activities and according to the same specifications.

3.2 Sod Installation

The Reservoir was the only mitigation area in which sod installation was proposed. Ten of the 14 proposed wetland sod mats were installed in September 2016, with four sedge sod mats held for 2017 installation. Native plant cover within the originally proposed sedge sod areas ranged between 20 and 40%. In order to plant the sedge sod where proposed, other native plants would have had to be removed, including the native swollen beaked sedge (*Carex retrorsa*, see additional information in Section 4.2.3). In lieu of removing naturally-establishing native plants, including sedges, where sedge sod mats had been originally proposed, a decision was made, in conjunction with the EPA, to:

- Plant only two of the sedge sod mats on the eastern reservoir margin, change the mix to a wetter sedge-rush composition (*Carex aquatilis*, *Carex utriculata*, *Juncus balticus*) able to endure a slightly longer inundation duration than the originally proposed sedge-rush sod (*Carex nebrascensis*, *Carex utriculata*, *Juncus arcticus*), and
- Substitute two bulrush mats for the proposed sedge mats and place them adjacent to those planted in 2016 in the western portion of the reservoir to help supplement the cover there.

The sod mats were harvested and picked up at the grower’s facility in Rexburg, Idaho by HF staff on Wednesday, August 16. They were installed the next day (August 17, see Appendix B, Figure B-1).

The later than anticipated installation dates reflected the prolonged 2017 reservoir high water level which stayed above 3.0 feet at the upper gage through June and above 2.0 feet through July. The upper reservoir gage level at the time of installation was 1.4 feet. Some of the mats were placed above the water level at the time of planting and some were planted within saturated soil or one to two inches of water. All mats were watered following installation and then periodically through September.

3.3 Site Preparation

3.3.1 HW-2 Grading Completion

Topsoil Source. Both additional harvest and transport of previously harvested on-site topsoil to the wetland mitigation area were identified by Idaho Department of State Lands as being in conflict with a State conservation easement on the property. As a result, topsoil needed for HW-2 was obtained from an off-site source. The soil was identified by the supplier as being from a weed-free source, but was not certified weed-free. It was examined by a Professional Wetland Scientist prior to use for any visible signs of weed infestation, such as remnant weed plants or roots/rhizomes of RCG or tansy (which are fairly distinct). None were noted. It was not possible to determine if any crop or other non-desirable seeds were in the soil.

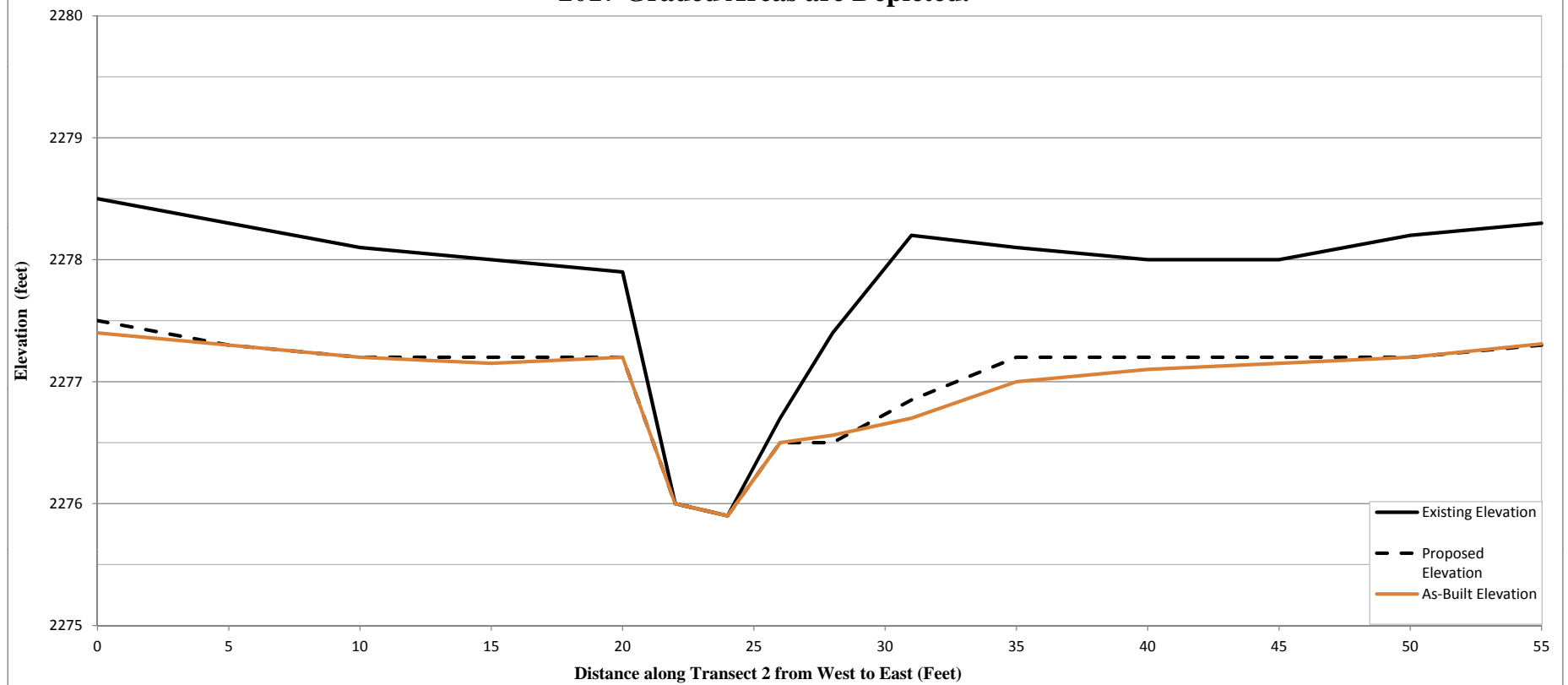
Grading and Topsoil Replacement. The remaining HW-2 grading and subsoil decompaction (i.e., between Transect 2 and the northern end of HW-2) occurred on August 27 and 28. Grading on the west side of the channel was conducted around existing trees and large shrubs in a manner to preserve these native plants (see photo documentation in Appendix B, Figures B-1 and B-2). Where possible, transplantation of pre-existing small meadowsweet was also conducted to retain these plants.

The new topsoil was placed on August 29. New topsoil depths were a minimum of six inches, with some scattered pockets of up to 12 inches. Overall the soil was left slightly uneven and roughened, as desired, for good soil-seed contact.

As for the 2016 grading, some minor fit-in the field modifications from the Detailed Plan were implemented regarding the grade slopes and equipment. These were:

- To obtain the desired decompaction level, in lieu of making a small sharp bench adjacent to the stream channel, a more gradual slope needed to be created, similar to the slopes within the adjacent upper HW-3a. The channel tie-in point remained the same (see Figure 2).
- A trackhoe was used to both rip the subsoil and place the new topsoil within the graded area instead of a rubber tired loader. As described in the 2016 Annual Report (ECW 2016b), this equipment substitution was more effective in providing the desired end results.

Figure 2. Baseline, Proposed and As-Built Elevations Along Transect 2 in HW-2. Both 2016 and 2017 Graded Areas are Depicted.



All aspects of erosion control installation, grading, and topsoil replacement were supervised by a Professional Wetland Scientist.

Following grading, plant locations were flagged in preparation for planting and Transect 2 was re-surveyed.

3.3.2 HW Solarization Removal

The black plastic solarization material in the remaining portion of HW-3a and HW-3b was removed on September 23 and the plant locations flagged in preparation for planting (see photo-documentation in Appendix B, Figure B-3).

3.4 Planting and Seeding

3.4.1 Bare Root Planting

Construction Completion. The 150 meadowsweet plants identified for Fall 2016 planting were not available from the nursery until April 2017. They were planted between April 19 and 22.

The HW was the only mitigation area in which the Detailed Plan specified Fall 2017 planting (absent mortality of 2016 planted trees and shrubs). Originally 1,075 trees and shrubs were scheduled to be planted in this area. The re-classification of HW-1 from mitigation area to mitigation buffer resulted in a few changes in the mitigation area planting numbers. Overall, most of the plants proposed for HW-1 planting were identified for installation in other portions of the HW area. Additionally, 22 conifers [15 ponderosa pine (*Pinus ponderosa*) and 7 western red cedar (*Thuja plicata*)] will be planted to increase structure and shade, as well as some of the extra plants ordered to meet minimum bundle sizes. The new HW mitigation area planting total was 1,120 trees and shrubs, of which 83 represented extra bundle plants, 22 represented additional conifers, and 200 represented plants transferred from HW-1 to other HW areas.

The following net changes in HW area planting numbers occurred:

- Transfer of some, but not all, of the planned HW-1 snowberry and meadowsweet to other parts of the mitigation area, for an overall decrease of 39 meadowsweet and 9 snowberry.
- Addition of 15 ponderosa pine (a quicker growing conifer than the facultative lodgepole pine), to add shade and structure, and 7 red cedar, a wetland conifer.
- Planting of 20 extra cottonwoods, 42 coyote willow and 21 Bebb's willow in the wettest portions of HW-3a. These extra plants represent those plants above and beyond the number specified to be planted that were included within minimum bundle sizes.
- Minor adjustments to the number of dogwoods (increase of 10) and hawthornes (reduction of 10).

The HW-1 buffer planting plan focused on adding shade via willow bundles in the channel (3 bundles of 3 willows each) and 10 ponderosa pine in the upland.

Planting was conducted by HF Staff and all planting dates and numbers are as reported by HF. Planting occurred mostly between November 3 and November 6, when halted by snow. Some additional planting occurred up to November 16, but not all of the planting was completed and anti-herbivory cages were not placed on all plants. On November 17, the nursery notified HF that 258 plants (conifers and willows) would not be available in 2017 as the fields in which they were planted were covered by deep snow and not accessible. These plants will be available in early Spring 2018 and planted at that time, along with 25 snowberry and meadowsweet being stored in the HF plant cooler. Overall, 917 of the remaining 1,200 individuals (including all 3 mitigation areas and the supplemental trees and shrubs) were planted during this time period. Approximately 250 plants remain uncaged.

Appendix B, Figure 4 contains planting photo-documentation and Appendix C contains a tally of all plants placed during 2017, as well as all plants placed during 2016 and 2017 and those plants to be placed in Spring 2018

Supplemental Planting. As discussed in detail in Section 4.0, no remedial planting was required in 2017 for the purposes of meeting the Year 1 survival criteria. Supplemental planting to increase long term cover, assist in shading out non-native plants, and increase habitat structure will occur in Spring 2018. The supplemental planting consists of the following items:

- Three western red cedar to be planted along the northeast reservoir margin to provide shade, and 50 supplemental willows to be planted along the reservoir margin to increase scrub-shrub habitat cover.
- Three lodgepole pine to be planted in the previously graded portion of HW-2.
- Five deciduous trees/shrubs (cottonwood and dogwood) to be planted in the Culvert area, as well as five extra dogwood from the minimum bundle size ordered.

3.4.2 Seeding

According to HF Staff, the 2017-graded portion of HW-2, as well as lower HW-3a and HW-3b were seeded in October. Seed was broadcast and lightly raked in. Most of the area was seeded with the Wetland-Riparian seed mix. The Upland Riparian seed mix was applied within the designated Upland Riparian areas and in an up to 10-foot buffer strip along the road. Re-seeding of bare spots in the 2016-graded area of upper HW-2/upper 3a occurred at the same time.

The seed mix was changed slightly from the 2016 mix to increase the percentage of species that germinated well in 2017 and remove the obligate wetland species. Appendix C contains a copy of the revised seed mix. The upland seed mix was the same as used in 2016.

4.0 MONITORING

4.1 Overview

4.1.1 Monitoring Protocols

The monitoring protocols identified in the Detailed Plan were adhered to and no deviations from the protocols were deemed necessary, other than minor changes in plot locations from the pre-construction data collection points, addition of data points and clarification of a couple of definitions. As noted in the Detailed Plan, the HW ground water well monitoring would be ceased if it could not be conducted without damaging the solarization material. This was the case and accessible wells were monitored in the early spring. All well monitoring subsequently ceased.

A few definition clarifications are added in this report regarding (1) the distinction between shrub and tree layers in cover value calculations, and (2) non-native cover specifications.

- **Shrub and Tree Layers.** The guidance provided in the Western Mountains and Valleys Delineation Supplement (COE 2010) was used to calculate cover values by strata. As per the guidance, woody plant cover was identified as being in the shrub layer if less than 3 inches diameter at breast height (dbh) and in the tree layer if greater than 3 inches dbh, regardless of height or mature plant form.
- **Non-Native Cover.** As discussed with the EPA on August 30, 2017, the non-native species percent cover specification applies only to (1) wetland areas and (2) non-native invasive species (see ECW 2017). For the purposes of this project, species within an erosion control mix used in the project vicinity (bird's-foot trefoil [*Lotus corniculatus*] and white clover [*Trifolium repens*]) are classified as early seral, allowable ground cover that is providing beneficial soil stabilization, and that will not persist over the long term (i.e., non-native, but not non-native invasive). As a result, the cover of these two species is not included in the non-native invasive species cover calculations.

Monitoring data collection occurred between May 7 and 13 and between August 26 and 30, with a third site visit occurring in July to review irrigation and weed control adequacy.

4.1.2 Success Criteria

The post construction performance criteria vary by year. The Year 1 (2017) success criteria include the following:

- **Success Criteria 1:** Planted woody species in the wetland and/or riparian areas at the sites will achieve at least 80% survival one year after the site is planted. If 80% survival is not achieved, all dead woody plantings are to be replaced, and the 80% performance measure will apply to the new plantings for the following growing season.

- **Success Criteria 2:** Non-native invasive weeds will provide 10% or less cover.
- **Success Criteria 3:** The wetland sod will maintain the percent cover it had when delivered (specified by the grower to be a minimum of 50%, pertinent to the Reservoir area only).

An overall description of each mitigation area's condition is provided in Section 4.2, with the degree to which each individual success criterion was met evaluated in Sections 4.3 through 4.5.

4.2 Mitigation Area Condition

4.2.1 HW-2/upper HW-3a

Two monitoring plots/photopoints were established within the area graded during October 2016. The Detailed Plan identified that data points were to be established at a subset of the Detailed Plan transect data collection points. The HW-2 transect data collection points fell along the line separating the 2016 graded and ungraded areas. As a result, the first post-construction monitoring data point was placed 15 feet south of Transect 2 to coincide with, but slightly offset from the surveyed Transect 2 data point 00+35. This data point (DP1) fell within an area planted with meadowsweet, with some woody plant layer overlap with the planted willows. The second data point (DP2) was placed in upper HW-3a within an area planted with cottonwoods (see Appendix D for photopoint location). Both data points were selected prior to visiting the site in May 2017 to ensure coverage of all three wetland shrub planting areas (meadowsweet, willow and cottonwood) while both (1) locating the points as close as feasible to Detailed Plan collection points, and (2) avoiding actual results bias in plot location.

Most of the topsoil used in the graded area was obtained from an on-site, weed-free location. However, when Fall 2016 road conditions prevented on-site topsoil access, some off-site material was obtained and placed within the 2016-graded area. The data point locations identified prior to the first 2017 monitoring visit happened to fall within areas in which the off-site material was placed (either as the sole topsoil or co-mingled with the on-site soil). Because there was an obvious visual difference in herbaceous cover between the topsoils, data from the pre-determined data points were supplemented by data collected along a transect placed through both topsoils. This transect was placed perpendicular to Transect 2 and originated from the transect mid-point within the graded area. Hereafter the two topsoils obtained from differences sources are referred to as "willow-wind soil" (referring to the on-site borrow area name) and "off-site soil". Overall, there were five herbaceous data points placed within each soil source.

Shrub survival was high, (see Section 4.3 below) but woody plant cover was low, averaging 1%. The low cover is not unusual for woody plants in the first year of establishment. There was no difference in shrub survival, vigor or cover between the two topsoils.

Herbaceous cover was patchy, with some overwinter within-site erosion and associated loss of seed noted. Bare spots remained in these areas at the end of the growing season.

The greatest establishment from the native wetland seed mix was from the two bent grasses (*Agrostis exarata*, *A. scabra*), poverty rush (*Juncus tenuis*), and meadow barley (*Hordeum brachyantherum*). In the upland buffer, meadow barley and mountain brome (*Bromus carinatus*) were observed. There was only sparse germination of the wild ryes (3 species of *Elymus* seeded, with only scattered Canada and streamside wild rye observed), which was surprising, as these species are well adapted to the roadside buffer environments in which they were seeded and the blue wild rye, in particular, occurs all along the adjacent MacArthur Lake Road.

Total cover within the off-site soil was 26.6%, mostly from herbaceous species. The seeded species and native wetland volunteers such as western cudweed (*Gnaphalium palustre*) and popcorn flower (*Plagiobothrys leptocladus*) provided 17.6% cover. Other species provided 6.3% cover. The majority of the other species cover was from bird's-foot trefoil and white clover, with only minor amounts of non-native invasive species cover. Total cover on the willow-wind soils was 8.1%, with all but 0.5% cover from either the seeded species or native wetland volunteers.

4.2.2 Culvert

As per the Detailed Plan, each of the six individual planting areas functioned as a monitoring plot (DP 3 to DP7), with two photopoints also established (see Appendix D). The cover values summarized in this report represent within-plot cover and don't include the upslope overhanging canopy, previously identified as providing up to 25 to 30% cover (ECW 2016a).

Total cover varied among planting areas, with a mean of 45.6% cover. Shrub cover was higher than in the other mitigation areas, ranging from 1.0 to 12.0% (mean of 4.5%), depending on the area examined. The cover was provided by both naturally establishing and planted trees and shrubs. Dominant herbaceous species included streamside violet (*Viola glabella*) in the spring, shifting to lady fern (*Athyrium filix-femina*) and horsetail (*Equisetum* spp.) in the late summer. Red-osier dogwood (*Cornus sericea*), alder (*Alnus incana*) and black cottonwood (*Populus trichocarpa*) provided the greatest cover in the shrub layer.

Native species dominated the cover (95% relative cover). Non-native invasive species observed included creeping yellowcress (*Rorippa sylvestris*), oxeye daisy (*Leucanthemum vulgare*), St. Johnswort (*Hypericum perforatum*), and RCG. The yellowcress consisted of only scattered individuals, all of which were hand-pulled as observed. Likewise, the daisy and St. Johnswort occurred only sporadically. The RCG is concentrated within the immediate vicinity of the culvert and will be treated mechanically again in 2018. Other non-native but not invasive species included a small amount of the trefoil-clover mix.

4.2.3 Reservoir

Four monitoring data points were established within the Reservoir Mitigation area: one at or near each gage (DP 9 Upper Reservoir gage, DP12 Lower Reservoir gage), with additional data points on the Upper Reservoir east (DP10) and west shorelines (DP11, see Appendix D). The upper gage represents the reservoir deepwater habitat and its monitoring results are presented separately from

the seasonally flooded emergent marsh/scrub-shrub data points where appropriate.

The establishment and growth of native plants following the 2016 RCG removal was phenomenal. Twenty-one naturally-establishing species plus two planted species (coyote willow, bulrush) were observed around and within the reservoir. Total native cover values at the emergent marsh/scrub-shrub data points ranged from 23 to 46%, with a mean of 38.1%. Cover was lower in the deeper water areas, with a mean of 15%. Overall reservoir cover was 30.8%.

Dominant species in the mitigation area included sword leaf rush (*Juncus ensifolius*) in the seasonally flooded areas, and bur reed (*Sparganium eurycarpum*), cattail (*Typha latifolia*), bulrush (*Schoenoplectus acutus*), and leafy pondweed (*Potamogeton foliosus*) in deeper water. Water plantain (*Alisma plantago-aquatica*=*Alisma triviale*) was ubiquitous throughout. Milfoil (*Myriophyllum spicatum*) also occurred. Removal in July and August reduced its mitigation area cover to 3%. The trefoil-clover erosion control mix provided high cover in portions of the PSS2 planting area. Overall, the mix represented a minor cover component throughout the mitigation area.

As for other mitigation areas, planted shrub cover was low, with higher cover provided by naturally establishing alders. Total shrub cover averaged 2.8%.

4.3 Success Criteria 1: Woody Plant Survival

► Planted woody species survival to be least 80%.

4.3.1 HW-2/upper HW-3a

Overwinter survival was high in the HW area (100%, Table 1). Vigor was good and only minor herbivory was observed. Survival remained high (96.3%) through midsummer, but some plants exhibited substantial signs of moisture stress in mid-July. At the end of the growing season, survival was 95.4%, above the 80% survival threshold.

In general, the vigor of the cottonwoods and willows was good, with many of the plants approaching the anti-herbivory cage height. Although some plants exceeded the cage dimensions, ungulate herbivory was minimal. The snowberries were mostly vigorous. The meadowsweet exhibited signs of early moisture stress (i.e., early change of leaf color, a precursor to early leaf drop), which was alleviated somewhat by increasing the irrigation water.

Conclusion: The success criterion was met and supplemental planting is not necessary. However, to increase planting area structure and add shade for establishing shrubs, three lodgepole pine (*Pinus contorta*) will be added in Spring 2018.

Table 1. Survival Through the Year 1 Growing Season in the Highland Flats Completed Mitigation Areas.

Mitigation Area	Number Plants	Survival-Number and Percent (%)			Main Factors Affecting Survival
		Overwinter	Midsummer	End Aug	
HW-2/Upper HW-3a	240	240 (100%)	231 (96.3%)	229 (95.4%)	Some minor herbivory and moisture stress
Culvert	114	100 (87.7%)	104 (with root sprouting of former top-dead, 91.2%)		Flood damage, high herbivory where cages flood-removed
Reservoir	50 (+ 50 exper.)	50 (100%)	47 (94.0%)	40 (80%)	Competition with trefoil-clover mix, summer water levels
Total	404 (454 with exper. willows)*	390 (96.5%)	382 (94.6%)	373 (92.3%)	High flows, flow-associated herbivory, some moisture stress
* 25 of the 50 experimental willows survived					

4.3.2 Culvert

Precipitation during the 2017 water year from October through April was almost double the long term average for the area (see Appendix A), with a number of rain-on-snow events. These conditions resulted in some periods of very high reservoir outflow and higher than usual flows in the unnamed tributary. Fourteen of the 114 planted trees and shrubs in the Culvert area were either removed by the flood flows or affected by flood-associated herbivory (i.e., herbivory where flows removed the protective cages) for an overwinter survival rate of 87.7%. Spring vigor was good where the cages remained intact, but only fair where cages were removed. High levels of ungulate browse were observed where plants were uncaged between the flood flows and early May when re-caging occurred.

There was no additional loss of planted trees and shrubs post spring flooding, and four plants that had been “top-dead” were able to root sprout and begin to grow. Except for these plants, all of the shrubs along the channel exhibit high vigor. Cottonwoods on terraces exhibited lower vigor. Overall survival was 91.2%, with the lowest vigor exhibited by cottonwoods on the upper terraces and the highest vigor exhibited by dogwoods, alders and cottonwoods along the channel.

Conclusion: The success criterion was met and supplemental planting is not necessary. To ensure that the long term cover requirement can be met in subsequent years, supplemental planting of cottonwoods and dogwoods occurred in November.

4.3.3 Reservoir

Planted willow survival was high overwinter and remained high through mid-summer (94.0%), but was reduced to 80% by the end of the growing season. Shrub cover was also generally low and growth less than in other areas. The willows were planted above the OHW level in Fall 2016, which was necessary due to the abnormally high Fall and Winter reservoir levels. Fifteen willows were transplanted in May 2017 to a point near the July water level, with an additional 15 marked for later transplantation. The transplanted willows exhibit higher vigor than those remaining at or above the OHW where (1) competition with upland species seeded for erosion control, and (2) a higher late summer elevation above the water table resulted in both mortality and loss of vigor. Transplantation of willows to a lower elevation in July was evaluated but not conducted because of the high mortality risk associated with transplanting fully leafed-out plants under high temperature conditions (i.e., 90+ degrees Fahrenheit).

Experimental willow survival was lower, with only 25 of the 50 experimental willows surviving over the winter. As experimental shrubs, these plants were not included in the overall survival tally presented in Table 1.

In addition to the planted willows, a number of woody plants self-seeded in the mitigation area, including cottonwood, Bebb's willow (*Salix bebbiana*) and red alder (*Alnus rubra*). The cottonwood and willow self-seeded approximately 1.0 to 1.5 feet lower than the OHW, at an elevation more suitable for long term wetland plant survival and growth. The alder, which is a facultative species, established at the high water line and has been able to successfully compete with the upland erosion control mix species.

Conclusion: The success criterion was met and supplemental planting is not necessary. However, because cover in the scrub-shrub portion of the mitigation is lower than desired, supplemental willow planting will occur in May 2018. The willows will be planted as water levels are beginning to recede to allow placement at a more appropriate elevation. To enhance shading and provide additional native plant cover, three (3) western red cedars (*Thuja plicata*) will be planted in the mitigation PSS2 area (at the upper end of the reservoir) in Spring 2018.

4.4 Success Criteria 2: Non-Native Invasive Weeds

- ▶ **Non-native invasive weeds to provide 10% or less cover in the completed mitigation areas.**

4.4.1 HW-2/upper HW-3a

Total mean cover was 17.4%, almost all from herbaceous species. Mean non-native invasive species cover was less than 1% and consisted only of scattered RCG and tansy.

Conclusion: The success criterion was met. Supplemental reseeding was conducted in November 2017 to reduce the amount of bare soil available for new invasive species colonization.

4.4.2 Culvert

The RCG near the culvert was removed in 2016, but mechanical removal was not used as a permit had not yet been issued. Instead the RCG was manually removed. Some regrowth and new establishment was noted in May 2017. The RCG was again manually removed, with some additional scattered RCG establishment, as well as regrowth from the adjacent road into the mitigation area. Overall, the RCG cover is well under 1%, providing higher cover at the culvert and within 10 feet of it (5-10% cover in this area). Additional manual removal will maintain the non-native cover at a low level until it can be shaded out by the planted shrubs. Removal is best accomplished under moist soil conditions to limit soil disturbance and ensure full rhizome extraction.

Other non-native invasive species observed in the area include a minor amount of creeping yellow cress, St. Johnswort and oxeye daisy.

Conclusion: The Culvert area total non-native cover was 0.5%, well under the 10% success criterion and meeting it. The RCG at the culvert has been manually removed twice. It will be removed once more in Spring 2018, with solarization applied immediately after along the road edge, and then removal halted (as long as substantial new expansion doesn't occur).

4.4.3 Reservoir

The 2016 and 2017 manual RCG removal has been very successful and the overall RCG cover within the entire reservoir area, including outside of the designated mitigation areas, was 1% in August 2017 (0 in the official monitoring plots), as compared to 27.2% in the Reservoir Reference plots (ECW 2016a). Milfoil cover was 3% overall (2.7% in the monitoring plots). Additional non-native cover was provided by the trefoil-clover mix in some of the upland portions of the mitigation area. This mix provides stabilizing ground cover for the reservoir side slopes and is not considered non-native invasive cover.

Conclusion: The Reservoir mitigation area non-native invasive cover was 2.7%, less than 10%, thereby meeting the success criterion. Continued RCG and milfoil manual removal, albeit at a lower intensity, will likely be necessary to ensure compliance in future years, and to allow the native plants to continue their establishment and growth.

4.5. Success Criteria 3: Wetland Sod Cover

► **Wetland sod to maintain a minimum of 50% cover.**

This criteria applies only to the Reservoir mitigation area, the only area in which sod was placed.

The cover provided by the bulrush sod was low in mid-July, with the plants not emerging above water until the beginning of July. The late emergence was directly attributable to the prolonged 2017 high water levels which stayed above 3.0 feet at the Upper Reservoir gage until mid-July (1.5

feet higher than at the same time in 2016). Some water withdrawal according to specifications provided by ECW was conducted by HF staff for the purpose of exposing the bulrush. Withdrawals were conducted at a rate of 0.1 to 0.2 feet per week (as measured on the gages) to allow bulrush exposure without the drawdown adversely affecting other native wetland plants. The bulrush rapidly emerged in mid to late July providing similar cover in August as it had when installed. Vigor was high, with the bulrush flowering by the end of August and also expanding vegetatively.

Conclusion: The bulrush sod cover was 50% in late August, which met the success criterion.

5.0 SUMMARY AND 2018 SCHEDULE

The HF mitigation implementation extended over a two-year period to allow a longer time for weed control via solarization to occur in the most weed-infested areas (HW- 3a/ 3b), while implementing mitigation in other areas (portions of HW-2/upper 3a, Reservoir, Culvert). With the staggered mitigation implementation, post-construction maintenance and monitoring of the 2016-completed mitigation areas occurred concurrently with mitigation completion. This combined report provides details of all maintenance, ongoing implementation, and monitoring activities conducted in 2017. Table 2 summarizes the main tasks under each activity and identifies when the tasks were performed. Beginning in 2018, activities will consist primarily of maintenance and monitoring, unless the monitoring identifies the need for any remedial actions.

5.1 2017 Activity Summary

Maintenance. Maintenance tasks in 2017 included weed control, irrigation of 2016-planted trees and shrubs, and replacement of some anti-herbivory cages with taller cages. Weed control was a major maintenance item and consisted of ensuring the integrity of the HW area solarization material and manual removal of RCG in all mitigation areas. Tansy was also removed in the HW area, and milfoil in the Reservoir area.

Maintenance measures were implemented as described in the Detailed Plan, with the exception of the HW-1 weed control in which a combination of solarization, manual removal, and herbicide application was used. HW-1 consists primarily of upland habitat and was included in the Detailed Plan to provide a buffer for the adjacent wetlands. Rather than trying to restore the area as mitigation acreage, discussions with the EPA during an on-site field visit resulted in an agreement to treat the area as the buffer it was intended to be (ECW 2017). In lieu of weed eradication, subsequent actions will focus on preventing weed seed spread and using shade to help reduce the weed growth.

Construction. Most of the HW Restoration area activities were scheduled for 2017 to allow the solarization time to work in controlling the RCG and tansy. All of the HW construction tasks specified for 2017 (except for planting of ordered trees that were not available due to weather conditions, and a small amount of other unplanted shrubs [25]) were completed between August 26 and November 17, including

- Completion of the HW-2 grading and topsoil replacement halted by inclement weather in 2016.
- Removal of the HW-3a/3b solarization material.
- Planting and seeding of the 2017-graded area of HW-2, and the remaining portions of HW-3a and HW-3b.

Additionally, the four wetland sod rolls identified for 2017 planting were installed in August.

Table 2. 2017 Mitigation Maintenance, Construction and Monitoring Dates.		
Task	Month	
	Anticipated Dates ¹	Actual Dates
Maintenance		
Install irrigation-Culvert and HW	March/April	June for HW, with later start because of high spring precipitation; Culvert initiated late July
Run Irrigation	April-September	June-September HW, July-August Culvert
Weed Control	April-October	May-end August, with later start because of later spring phenology
Implement Contingency	<ul style="list-style-type: none">Spot herbicide use in HW-1 in June, early JulyChange to treat HW-1 as buffer and not mitigation area September	
2017 Construction		
Plant meadowsweet	March/April depending on availability	April 19-22
Install sedge sod	May-June	August 17, because of higher than normal reservoir level
Verify Fall 2017 plant materials	May	Initiated May and completed first week of September with final order
Order any new replacement plants	May	Initiated May and completed first week of September with final order
Finish Grade HW-2	Anytime July-September	August 27 to 29
Remove black plastic, rest HW	October	September 23
Plant HW-1, rest HW-2, Lower HW-3a, HW-3b, full channel	October-November, depending on weather	November 3 to 17
Supplemental plant		
Seed all HW areas	October-November, depending on weather	October 16-19

Table 2. 2017 Construction (continued).		
Task	Month	
	Anticipated Dates¹	Completed Dates
Remove fiber rolls where plants have stabilized graded or other areas	November	Fiber rolls to be left in place for the life of the project.
Monitoring		
Spring	May	May 7-13
Mid-Summer	July, as necessary	July 16-20
Late Summer	Late August/early September	August 26-30
Memo submission	May and September, 2 weeks post monitoring	May 24 and September 5
Annual Report	December	December 12
¹ All dates were estimated and dependent on actual weather conditions and annual changes in phenology for implementation. Implementation dates for seeding and planting provided by HF staff.		

Supplemental planting to increase cover occurred in the Culvert area, with additional planting to occur at the Reservoir and HW areas in Spring 2018. Re-seeding of bare areas in the 2016-graded portion of HW-2 occurred in Fall 2017.

Monitoring. Table 3 summarizes the degree to which the three Year 1 success criteria were met, both within each individual mitigation area and overall. All mitigation areas and the project as a whole met all success criteria.

There are no total cover success criteria until Year 5 when 80% native cover is required. However, progress is required to be exhibited towards the end goal beginning in Year 2 (Reservoir) and Year 3 (other mitigation areas). The monitoring evaluates cover annually so that appropriate adjustments can be made, as necessary, to ensure that the cover goals will be met by the specified years. Cover in some areas was less than desired and measures to improve subsequent year cover through supplemental seeding or planting were either implemented in November 2017 or will be implemented in April/May 2018.

Table 3. Evaluation of the Degree to which the Year 1 Success Criteria were met in 2017.

Success Criteria	Results	Evaluation
#1. Planted woody species survival to be at least 80%.	Overall woody plant survival of 92.3%, each mitigation area met or exceeded success criteria, ranging from 80% (Reservoir) to 95.4% (HW).	Success criteria met.
#2. Non-native invasive species cover to be 10% or less	Non-native invasive species cover ranged from 0.5 to 2.7%.	Success criteria met.
#3. Wetland sod to maintain a minimum of 50% cover.	Bulrush sod cover of 50%.	Success criteria met.

5.2 2018 Schedule

Planting of the willows and conifers not available from the nursery due to weather conditions, the 25 stored meadowsweet and snowberry, and all supplemental planting will occur as early as possible in Spring 2018 to take the greatest advantage of the early season high water table. The Reservoir supplemental willows will be planted in May as the water levels begin to decrease to allow the plants to be placed approximately 1 to 1 ½ feet below the high water level.

The primary maintenance tasks in 2018 will be irrigation and weed control in both the 2017 and 2016-planted areas (Table 4). All of the HW area plantings will require irrigation in 2018. With the high tree and shrub vigor in the Culvert area, a second season of irrigation may not be necessary.

Weed control activities will need to include the following:

- Periodic cutting of RCG and tansy in the HW-1 buffer area, beginning approximately mid-June (depending on annual phenology), with a second cutting 30 to 45 days later, and thereafter as necessary to prevent flowering/seed set.
- Manual removal of any establishing RCG or tansy in the HW mitigation areas. The HW weed removal is best accomplished under moist, but not wet, soil conditions. These conditions will likely occur in May for HW-2 and HW-3b, and June for HW-3a.

- Manual removal of RCG around the culvert in the Culvert mitigation area, with solarization applied immediately after along the road edge to prevent re-growth into the area. The optimal time for removal will likely be May through early June.
- Manual removal of any new RCG around the reservoir. If necessary, some removal can occur in May to coincide with the supplemental willow planting. Otherwise, any necessary weed removal is best accomplished midsummer. At this time, milfoil removal will also occur.

Monitoring will continue in 2018, with data collected in all mitigation areas. The data collection will be the same for both 2016 and 2017-completed areas, but the 2016-completed mitigation area progress will be compared to the Year 2 success criteria. Conversely, the 2017-completed mitigation area progress will be compared to the Year 1 success criteria.

Table 4. 2018 Mitigation Implementation and Monitoring Schedule. Except for deliverable dates, all dates are approximate and weather or site condition-dependent.

Task	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
2018 Construction												
Plant HW willows, conifers and stored shrubs			X	X								
Maintenance												
Set out hoses and Run Irrigation				X	X	X	X	X	X			
Weed Control-HW mitigation areas					X	X	X	X				
Weed Control HW-1 Buffer						X	X	X				
Weed Control-Culvert					X							
Weed Control-Reservoir					X		X	X				
Monitoring												
Spring					X							
Mid-Summer						X						
Late Summer								X	X			
Memo submission					X				X			
Annual Report												X
2018 Remediation												
Plant Culvert supplemental plants			X	X								
Plant supplemental Reservoir willow					X							
Order replacement plants, if necessary									X			
Replace dead plants, if necessary											X	
Implement Contingency				As, or if, necessary								

6.0 REFERENCES

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ECW (EcoWest Consulting, Inc.) 2016a. Highland Flats Tree Farm Wetland and Riparian Restoration Plan-Final Detailed Plan . Unpublished report prepared for Essential Oil Research Farm, LLC, Naples, Idaho.

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APPENDIX A

BONNER'S FERRY, IDAHO WETS STATION WEATHER DATA

Table A-1. Comparison of Long Term Monthly and Annual Precipitation and Temperature from the Bonner's Ferry, Idaho WETS Station to the Actual Monthly Total Values for 2015, 2016 and 2017. Missing values represent data that have not yet been collected.

Month	Temperature ° Fahrenheit				WET-Bonner's Ferry					
	30-Year Average	2015	2016	2017	30-Year Average (inches)			Individual Year Monthly Totals (inches)		
					Average	30-70% Range		2015	2016	2017
January	28.1	29.0	30.1	20.8	2.70	1.62	3.28	2.34	2.64	1.48
Feb	31.4	37.7	36.9	28.6	1.77	1.12	2.14	2.90	1.56	7.06
March	39.4	42.7	41.2	37.9	1.49	0.93	1.80	3.89	3.48	4.58
April	47.2	47.1	53.8	45.0	1.42	0.86	1.73	1.06	0.38	2.08
May	54.3	59.9	58.3	56.0	1.76	1.07	2.12	1.21	2.08	1.08
June	61.6	69.0	62.7	63.2	1.62	1.07	1.95	0.81	1.04	1.35
July	67.5	71.4	67.7	74.0	1.02	0.53	1.27	0.43	0.70	0.01
August	66.9	70.5	69.2	72.4	1.07	0.48	1.31	0.99	0.23	trace
September	57.4	57.6	57.8	60.4	1.16	0.58	1.42	0.51	1.19	0.80
October	45.4	51.4	46.5	44.6	1.61	0.79	1.97	0.73	7.99	2.71
November	35.0	34.9	41.0	35.7	3.03	1.82	3.68	3.60	1.81	4.32
December	26.8	30.8	23.4	--	2.91	1.89	3.50	5.90	3.92	--
Total	47.0	50.2	49.0	--	21.56	18.76	23.84	24.37	27.02	--

APPENDIX B

MITIGATION IMPLEMENTATION PHOTO-DOCUMENTATION



Figure B-1. Sedge sod along the Reservoir east bank immediately post installation (top) and HW-2, eastern portion post grading and with planting locations flagged (bottom). In the bottom photo, the in-progress grading of HW-2 west is also shown.



Figure B-2. HW-2 west of channel post grading showing retention of existing native trees and shrubs.



Figure B-3. Looking south at the 2017-graded portion of HW-2, the 2016-graded portion of HW-2/upper 3a, and the remaining HW area following solarization material removal, respectively (top). The bottom photo depicts part of the plant location flagging with the FACW Bebb's willow (blue and white-striped flags, foreground) placed around the depressions and stream channel, and the FAC cottonwood (yellow flags) and hawthorne (orange flags) placed in slightly higher locations.



Figure B-4a. Looking northeast at the 2017-graded area post-planting (top) and south from HW-2 (bottom).



Figure B-4b. Looking north at the HW mitigation area from HW-3b. The close-up in the bottom photo shows the planted meadowsweet for which cages are still to be installed (pink flags) and flags for Bebbs willow (blue stripe) for which no plants were available Fall 2017.

APPENDIX C

PLANTING TABLES, SEED TAGS , AND PLANT ORDER DOCUMENTATION

Table C-1. Summary of Woody Plant Material Placed in the Highland Flat Farm Mitigation in 2017.

Mitig Area	Habitat	Bare Root Shrubs and Trees												
		Alin	Cose	Crdo	Pico	Pipo	Poba	Potr	Saex	Sabe	Spdo	Syal	Thuja	Total
Spring 2017														
HW-2/3a	Mesic Rip										140			140
Culvert											10			10
TotalSpring 2017											150			150
Fall 2017														
HW2-2017 Gr	Mesic Rip										104	36		140
HW-3a	All		37	30			94	11			310			482
HW3b	All			20			3	14			60	193		290
HW-1	Suppl													0
HW2-2016 gr	Suppl													0
Culvert	Suppl		2				3							5
Reservoir	Suppl													0
Total Fall 2017		0	39	50	0	0	100	25	0	0	474	229	0	917
Total 2017		0	39	50	0	0	100	25	0	0	624	229	0	1067

Table C-2. Summary of Woody Plant Material Placed in the Highland Flat Farm Mitigation in both 2016 and 2017*.

Mitig Area	Habitat	Bare Root Shrubs and Trees												
		Alin	Cose	Crdo	Pico	Pipo	Poba	Potr	Saex	Sabe	Spdo	Syal	Thuja	Total
Fall 2016														
HW-2/upper 3a							18		32			50		100
Culvert	PFO/PSS	32	42				30							104
Reservoir	PSS								50					50
Reservoir	PSS-Exper								50					50
Total Fall 2016		32	42				48		132			50		304
Spring 2017														
HW-2/upper 3a	Mesic Rip										140			140
Culvert											10			10
TotalSpring 2017											150			150
Fall 2017														
HW2-2017 Gr	Mesic Rip										104	36		140
HW-3a	All		37	30			94	11			310			482
HW-3b	All			20			3	14			60	193		290
HW-1	Suppl													0
HW-2 2016 gr	Suppl													0
Culvert	Suppl		2				3							5
Reservoir	Suppl													0
Total Fall 2017		0	39	50	0	0	100	25	0	0	474	229	0	917
Total 2016/2017		32	81	50	0	0	148	25	132	0	624	279	0	1371

* Total without experimental willows=1321

Table C-3. Woody Plant Material To Be Placed in the Highland Flat Farm Mitigation in Spring 2018.

Mitig Area	Habitat	Bare Root Shrubs and Trees												Total
		Alin	Cose	Crdo	Pico	Pipo	Poba	Potr	Saex	Sabe	Spdo	Syal	Thuja	
HW2-2017 Gr	Mesic Rip				15				33		4	21		73
HW-3a	All				7	6			8	91			7	119
HW3b	All					9				7				16
HW-1	Suppl					10			9					19
HW2-2016 gr	Suppl				3									3
Reservoir	Suppl								50				3	53
Total Spring 2018		0	0	0	25	25	0	0	100	98	4	21	10	283



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Leslie
Michael
email

ORDER # 4281

ORDER DATE 07/15/16

REVISION DATE 09/05/17

PAGE 1 of 1

ORDER ACKNOWLEDGMENT

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Young Living Farms
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Fax: (208) 267-1700

SHIP TO

Young Living Farms
Highland Flats Farm
5060 McArthur Lake Road
Naples, ID 83847
Phone: (208) 267-0800
Fax: (208) 267-1700

ESTIMATED SHIP DATE	SHIP VIA	TERMS	ORDER PLACED BY	CUSTOMER PO #
11/01/17	Customer Pick-up	NET 30	Leslie	Restoration

ORDERED	PRODUCT DESCRIPTION	SIZE	UNIT PRICE	EXT. PRICE
Seedling Conifer				
25	PINUS CONTORTA V. LATIFOLIA 'KOOTENAI' 2-1		\$1.86	\$46.50
25	PINUS PONDEROSA 'SPOKANE' 2-1		\$1.92	\$48.00
25	THUJA PLICATA 'KOOTENAI' 2-1		\$2.11	\$52.75
Seedling Deciduous				
50	CORNUS SERICEA 2-0 SHEARED	24-36 in.	\$1.71	\$85.50
50	CRATAEGUS DOUGLASII 'BOUNDARY COUNTY' 2-0 SHE	24-36 in.	\$1.95	\$97.50
25	POPULUS TREMULOIDES 'BOUNDARY COUNTY' 1-0	48-60 in.	\$4.90	\$122.50
100	POPULUS TRICHOCARPA 'BOUNDARY COUNTY' 1-0	24-36 in.	\$1.56	\$156.00
100	SALIX BEBBIANA 'BOUNDARY COUNTY' 1-0	6-12 in.	\$0.69	\$69.00
50	SALIX EXIGUA 'BOUNDARY COUNTY' 1-0	6-12 in.	\$0.87	\$43.50
500	SPIRAEA DOUGLASII 'BOUNDARY COUNTY' 2-0	24-36 in.	\$1.30	\$650.00
250	SYMPHORICARPOS ALBUS 'KANIKSU' 1-0	18-24 in.	\$0.97	\$242.50

By signing below I am verifying the above order is correct and accepted according to the Terms and Conditions of Sale on the reverse of this Order Acknowledgment.

Authorized Signature

Date

SUBTOTAL \$1,613.75

DISCOUNT \$0.00

ORDER TOTAL \$1,613.75

DEPOSIT AMOUNT \$403.44

PAYMENTS & CREDITS \$0.00

****Please sign and return the YELLOW COPY. Deposit Due within 30 days or order may be cancelled****

Please charge the ☐ 25% deposit ☐ Order Total (Plant Cost Only. Shipping charged after shipment.) to the following credit card.



Card # _____

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11/02/17

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Fax: (208) 267-1700
Contact: Michael Carter
Cell: (208) 597-1779 Rami
mcarter@youngliving.com (payables)

Ship To: Young Living Farms
Highland Flats Farm
5060 McArthur Lake Road
Naples, ID 83847
Phone: (208) 267-0800
Contact: Michael Carter

Ordered Shipped Latin Name Size

Conifer Seedling

25 () PINUS CONTORTA V. LATIFOLIA 'KOOTENAI' 2-1
25 () PINUS PONDEROSA 'SPOKANE' 2-1
25 () THUJA PLICATA 'KOOTENAI' 2-1

Deciduous Seedling

50 (50) CORNUS SERICEA 2-0 SHEARED 24-36 in.
50 (50) CRATAEGUS DOUGLASII 'BOUNDARY COUNTY' 2-0 SHEARED 24-36 in.
25 (25) POPULUS TREMULOIDES 'BOUNDARY COUNTY' 1-0 48-60 in.
100 (100) POPULUS TRICHOCARPA 'BOUNDARY COUNTY' 1-0 24-36 in.
100 (Spring) SALIX BEBBIANA 'BOUNDARY COUNTY' 1-0 6-12 in.
50 (Spring) SALIX EXIGUA 'BOUNDARY COUNTY' 1-0 6-12 in.
500 (500) SPIRAEA DOUGLASII 'BOUNDARY COUNTY' 2-0 24-36 in.
250 (200) SYMPHORICARPOS ALBUS 'KANIKSU' 1-0 18-24 in.

Total Items: 1200

1-4 PW



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1(509)725-1235 Fax: 1(509)725-7015

QUOTATION

QUOTE: 50896

DATE: 09/05/2017

QUOTATION EXPIRES:

CUSTOMER: 10263

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Naples, ID 83847

FOR SHIPMENT TO: SAME

PAGE	FOB	TERMS	SALESPERSON	
1	Davenport	NET 30	Kevin Miller	
SHIP DATE	DELIVERY DATE	ORDERED BY	CUSTOMER TELEPHONE	
10/15/2017		Leslie	(210)542-4310	
QUANTITY	UM	DESCRIPTION	UNIT PRICE	LINE PRICE
30.4	L	Wetland	18.5197	563.00
26	PLS L	Barley, Meadow,		
0.3	PLS L	Bentgrass, Spike,		
0.1	PLS L	Rush, Poverty		
4	PLS L	Wildrye, Canada		
31	E	Blend Fee,	0.0500	1.55

Accepted By: _____

Date: _____



P.O. Box 1064
Davenport, WA 99122
1(800)828-8873
1(509)725-1235 Fax: 1(509)725-7015

QUOTATION

QUOTE: 50903

DATE: 09/05/2017

QUOTATION EXPIRES:

CUSTOMER: 10263

QUOTED FOR: Michael Carter
Young Living Farms
5060 McArthur Lake Rd
PO Box 362
Naples, ID 83847

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PAGE	FOB	TERMS	SALESPERSON	
1	Davenport	NET 30	Kevin Miller	
SHIP DATE	DELIVERY DATE	ORDERED BY	CUSTOMER TELEPHONE	
10/15/2017		Leslie Gecy	(210)542-4310	
QUANTITY	UM	DESCRIPTION	UNIT PRICE	LINE PRICE
26	L	Upland Riparian Mix	9.8285	255.54
7.16	PLS L	Wildrye, Blue,		
6.28	PLS L	Wheatgrass, Streambank, Sodar		
6.28	PLS L	Mountain Brome, VNS		
6.28	PLS L	Barley, Meadow,		
26	E	Blend Fee,	0.0500	1.30
		Freight/Handling,		

Accepted By: _____

Date: _____

APPENDIX D

MONITORING PLOT LOCATIONS AND REPRESENTATIVE PHOTOPPOINTS



Figure D-1. Location of the HW Area Monitoring Plots (Data Points or DP) and Photopoints (PP).

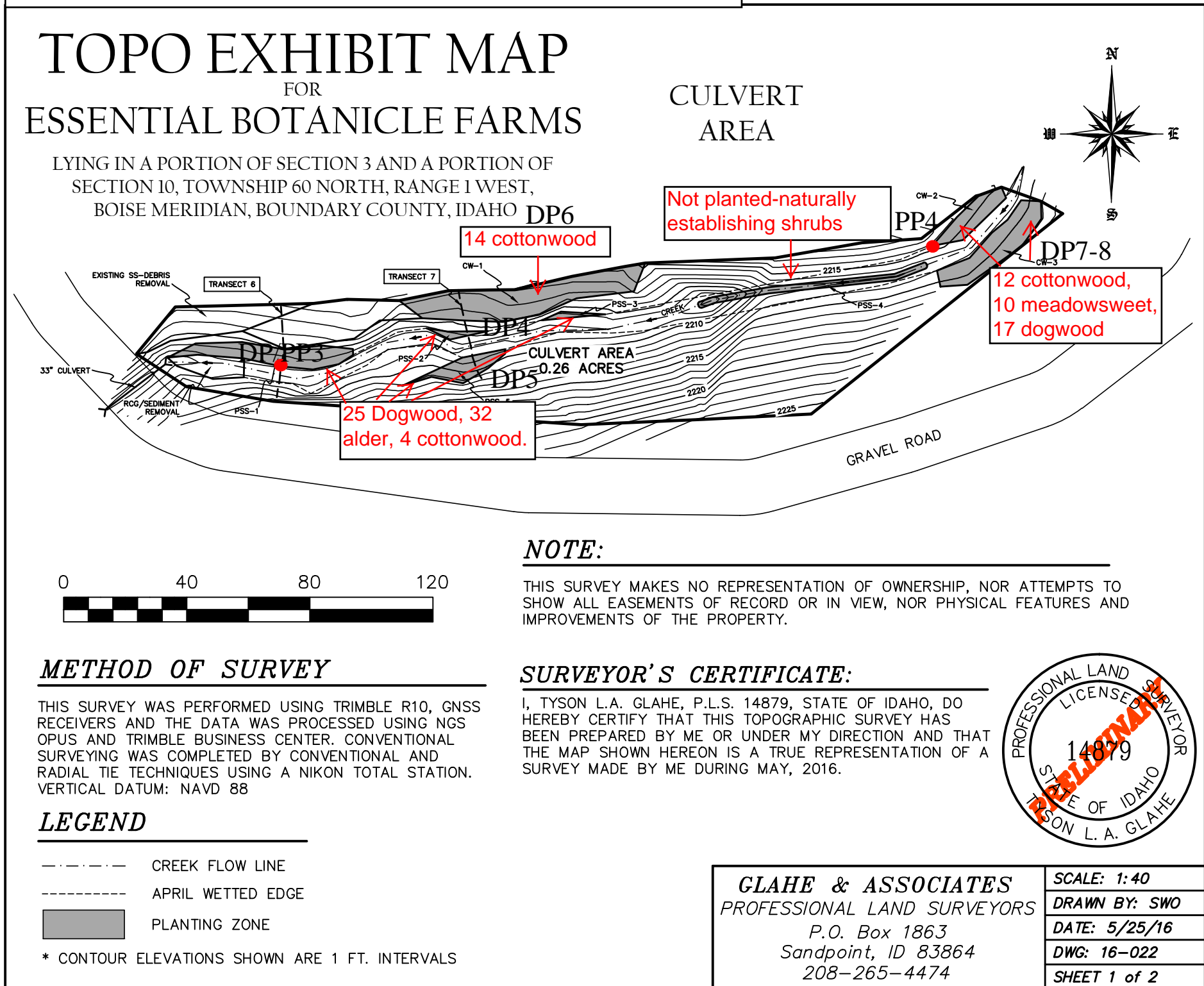


Figure D-2. HW-2 Photopoints (PP). PP 1 looking south from Transect 2 at the 2016-graded area in May 2017 (top) and August 2017 (bottom).



Figure D-3. HW-2 Photopoints (PP). PP 2 looking north at the 2016-graded area in May 2017 (top) and August 2017 (bottom, taken during the grading completion).

Figure D-4. Location of the Culvert Area Data Plots and Photopoints.



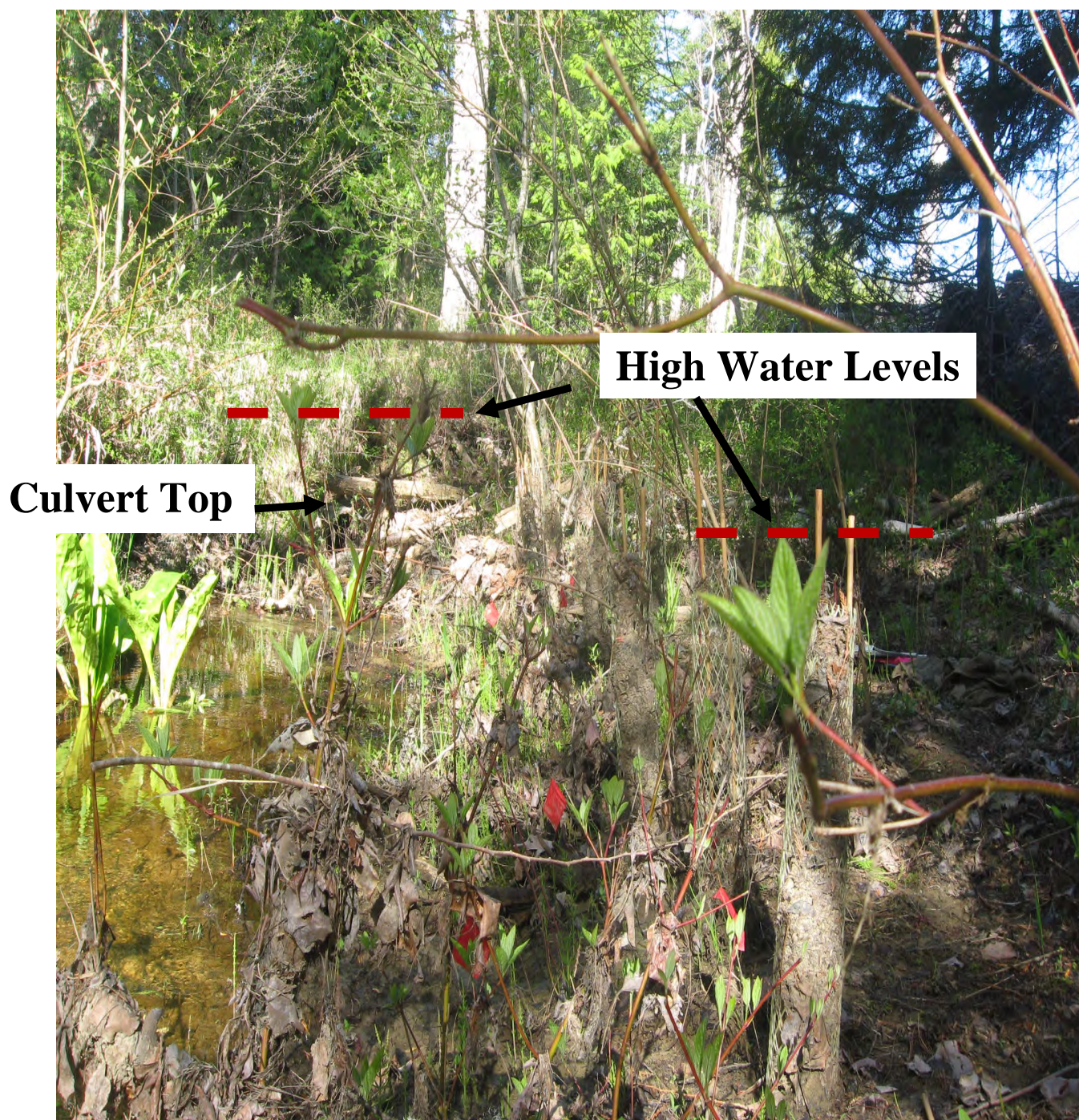


Figure D-5. 2017 High water level at the Culvert Enhancement area, as taken from Culvert PP 3 (looking southwest) in May 2017. Note a former anti-herbivory cage bamboo stake impaled in the soil at the high water level near the culvert.



Figure D-5b. Looking southwest from PP3 in August 2017.

Appendix Figure D-6. Location of the Reservoir Area Data and Photopoints.

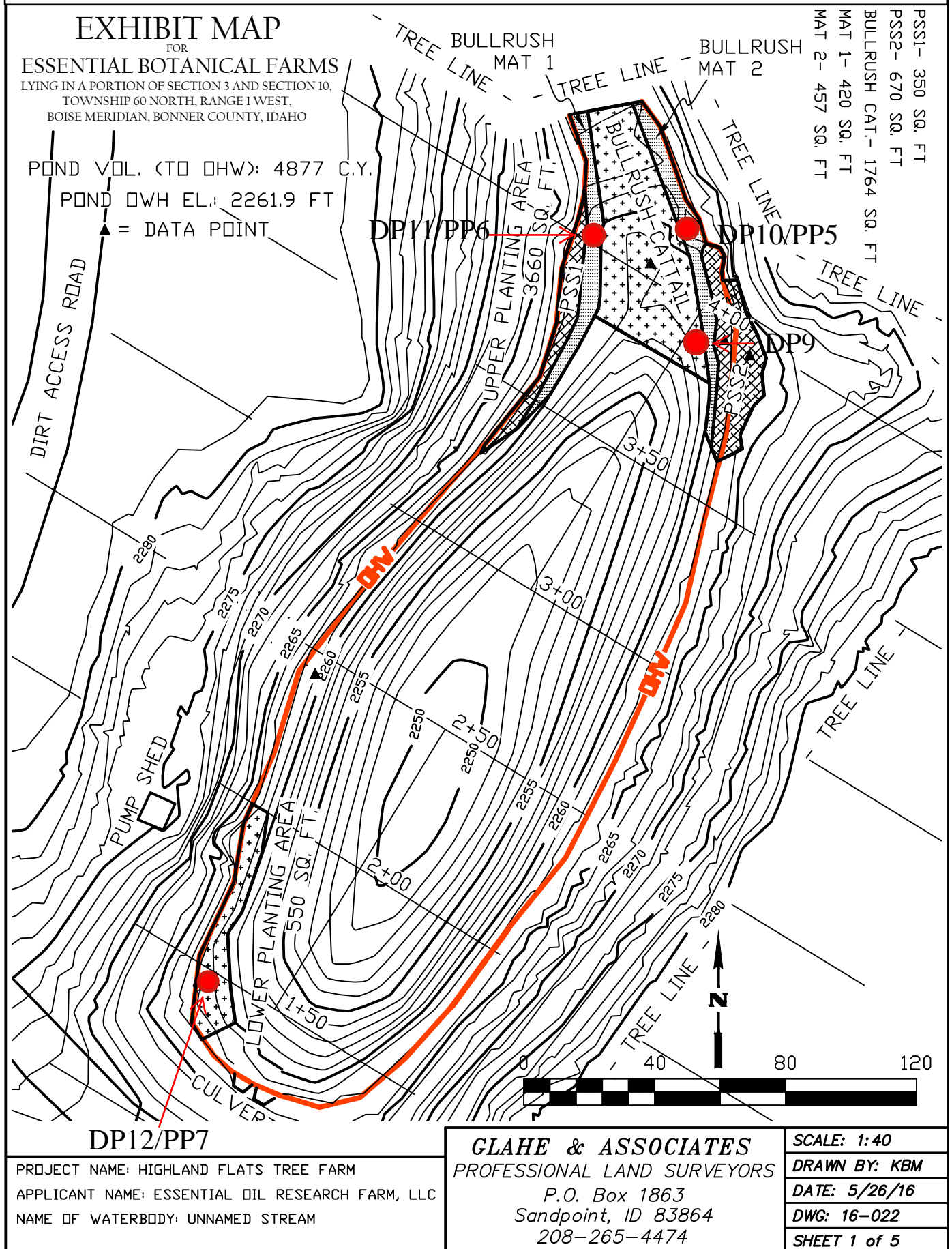




Figure D-7. Reservoir PP5 looking south (top) and north (bottom) in July 2017.



Figure D-8. Looking north at the lower gage/PP 7 (top) and from Reservoir PP6 looking south (bottom) in July 2017.



Figure D-9. Wetland sod from the western Reservoir margin near PP6 looking at both the 2016-installed bulrush sod in the background and the newly-installed sod in the foreground (top) and at the 2017-installed bulrush on both reservoir margins (bottom) in August 2017. Note the bulrush in flower in the bottom photograph.